

PATENT COOPERATION TREATY

PCT Rec'd PCT/PTO 23 JUL 2004 INTERNATIONAL PRELIMINARY EXAMINATION REPORT (PCT Article 36 and Rule 70)

REC'D 05 MAY 2004

Applicant's or agent's file reference TS 1237 PCT.	FOR FURTHER ACTION		See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/EP 03/00790	International filing date (day/month/year) 24.01.2003	Priority date (day/month/year) 25.01.2002	
International Patent Classification (IPC) or both national classification and IPC C10G9/36, C10G9/36			
Applicant SHELL INTERNATIONALE RESEARCH MAATSCHAPPIJ B.V.			

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 5 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 4 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the opinion
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 16.07.2003	Date of completion of this report 03.05.2004
Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer Deurinck, P Telephone No. +31 70 340-2404 

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/EP 03/00790**

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1, 3-16	as originally filed
2, 2a	received on 23.01.2004 with letter of 23.01.2004

Claims, Numbers

1-6	received on 23.01.2004 with letter of 23.01.2004
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2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

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**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes: Claims	1-6
	No: Claims	
Inventive step (IS)	Yes: Claims	1-6
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-6
	No: Claims	

2. Citations and explanations

see separate sheet

AD V:

D1: US 6 371 308

D5: US 4 361 478

1. Novelty (Art. 33(2) PCT)

The present application meets the requirements of Art. 33 PCT, because the subject-matter of independent **Claim 1** is new in the sense of Article 3(2) PCT.

None of the prior art documents discloses a method for the preparation of ethene, propene and butene by steam cracking wherein the feed comprising heavy hydrocarbons obtained by Fischer-Tropsch synthesis is subjected to steam cracking in a naphtha designed steam cracking furnace wherein the furnace comprises a convention zone providing 3 heating zones and a cracking zone.

Thus the subject-matter of independent Claim 1 is new.

2. Inventive step (Art. 33(3) PCT)

The present application meets the requirements of Article 33 PCT, because the subject-matter of independent **Claim 1** involves an inventive step in the sense of Article 33(3) PCT.

Document D1, which is considered to represent the most relevant state of the art, discloses a method for the preparation of olefins from 2 to 4 carbon atoms (see D1: column 1, lines 13-23) by steam cracking, wherein the feed comprising hydrocarbons obtained by Fischer-Tropsch synthesis which Fischer-Tropsch hydrocarbons have a boiling point range of from 30°C to 350°C (see D1: column 2, lines 36-51), is subjected to steam cracking in a steam cracking furnace (see D1: claim 1).

The subject-matter of Claim 1 differs from D1 in that

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- the steam cracking furnace is a naphtha designed steam cracking furnace whereas in D1 the furnace is not specified in detail (*first distinguishing feature*); and
- the convection zone contains 3 heating zones whereas in D1 the feed is preheated by heat exchange with the synthesis gas stream (see D1: column 7, lines 45 - column 8, line 11) (*second distinguishing feature*).

It is not clear which *technical effect* might be achieved with these distinguishing features.

The *problem to be solved* by the present invention may be regarded as: "To provide an alternative process for the preparation of ethene, propene and butene".

Document D5 discloses a process for steam cracking a hydrocarbon feed comprising a convection zone and a cracking zone. The convection zone comprises 3 heating zones.

Starting from the disclosure of D1 and intending to solve the above-mentioned problem, a person skilled in the art had no incentive from D5 or the state of the art to use a naphtha designed steam cracking furnace.

Thus the subject-matter of independent Claim 1 involves an inventive step.